large part has been derived from the application of the abstract truths of physical science to the requirements of ordinary life, and that therefore the needs of physical science would be properly provided for out of it.

As to the College Endowments, whichever way we look at them, either as private bequests, as they are at length ceasing to be regarded, or as public funds, the conclusion is the same: their proper destination is the support of learning and Science.

If we look upon them as private bequests, and interpret the wills of founders and benefactors on the usual *çi-près* principle, we should be right in devoting to investigation of facts at first hand the funds which were left by the far-seeing men of the time of the revival of letters for the support of book-learning, which at that time occupied the place of modern Science. That they so regarded the aim of these bequests is shown, amongst other things, very remarkably by the universal annexation to the enjoyment of them of the condition of residence within the Universities. When the whole, or the major part, of the materials of investigation was enshrined in libraries, to insist that a man should remain where libraries were was to insist that he should remain in his workshop.

If on the other hand we are to regard these endowments as public funds, as is now generally agreed, is it right that such public funds should be consumed either in educating those who are practically as well able to pay for their own education as those who now receive a similar one at, say London University, an institution which is not aided by the State; or in supplying a life-maintenance to a considerable body of able young men, in return for passing a good examination at the outset of life?

It is well known that the ordinary Fellow of a college does not dream for a moment that he has any duties towards knowledge or Science. He regards the public money which he enjoys as a portion in a freehold estate, to enable him to tide over the uncertain years which come at the commencement of the ordinary professional career, the brilliant rewards of which we have shown to be the great cause of the decline of Science in this country, because they enable the practical life to outbid in attractiveness the laborious but most necessary pursuit of truth.

CHAUVEAU'S ANATOMY OF DOMESTICATED ANIMALS

The Comparative Anatomy of the Domesticated Animals. By A. Chauveau. Translated and edited by G. Flemming, Vet.-Surg. R.E. (J. and A. Churchill.)

FOR a long time there has been a great want felt by veterinary surgeons of a first-class work on the anatomy of the horse and other domestic animals, to be to them as valuable and trustworthy a book of reference as Quain and Sharpey's Anatomy is to the student of human anatomy. This feeling has induced Mr. Flemming to undertake the very arduous and considerable task of translating from the French the generally esteemed "Traité d'Anatomie Comparée des animaux domestiques" of M. Chauveau. The high position held by the Veterinary School of Lyons, and the great scientific reputation of its Professor, are sufficient guarantee for the excellence and accuracy of the original work before us, so that it will be unnecessary to enter into a detailed criticism of it: it will therefore be our chief duty to consider the manner in which the translation has been performed.

There are, however, one or two points to which we should like to draw attention in the work itself. First respecting the nomenclature of the lobes of the liver in the horse, Prof. Chauveau, as do most of the authors on the same subject, incorrectly calls the Caudate lobe the Spigelian. This error was clearly pointed out by Prof. Flower in his Hunterian Lectures last year, when he conclusively proved that the free, ear-shaped lobe, which is situated to the right of the vena portæ in the horse, rhinoceros and tapir, is the caudate and not the spigelian lobe. This last is represented by a long attached transverse ridge of hepatic tissue, situated further to the left. Again, it is not clear why the protometra is said to be incorrectly termed the *uterus mascululinus*, for it is certainly not a gland in the ordinary sense of the word, and is as certainly the rudiment of the duct which developes into the uterus in the female. In the paragraph on the small horny plates, called "chesnuts," found on the lower third of the inner face of the forearm and at the upper extremity of the inner face of the metatarsal bone of the horse, the author remarks that "In solipeds, the chesnut is the representative of the thumb." That such is the case is, to say the least, extremely doubtful particularly in any member of the class Ungulata; and from the fact that in the rhinoceros and tapir the second digit is perfectly developed, these epidermic appendages would be most probably larger in them than in Horse, if they represented the pollex and hallux; however they are altogether absent. That these horny plates in the fore-limb are situated above the carpus, is likewise not in harmony with their representing the thumbs.

Respecting the translation, which considering the size of the volume, must have been a very serious undertaking, the reader will, in the majority of cases, learn as correctly and as easily as from the original French. A perusal of several portions of the work seems to indicate that the translation has been performed by more than a single hand, for in some portions it is not so good as in others, and different words are employed to express the same one in the original. If there is any fault to find, it is one which may be considered by some to be rather an advantage than not, namely, that the rendering is too literal. A verbatim translation is in some cases not capable of giving the full force of the author's meaning in scientific as well as in other subjects, each language having an idiomatic phraseology of its own. For instance, the middle of the diaphragm may be correctly termed in French "le centre phrénique," but it is more than perplexing to comprehend at first sight what is meant by "the phrenic centre." The cavities of the heart (*les poches*) are not called "pouches" by English anatomists, and the colon is succulated (*bosselé*), not "bosselated;" this latter word is not to be found in some, perhaps not in any standard dictionaries. The stylo-glossus muscle does not "respond" (*il repond*) but corresponds "with the mylo-hyoid outwardly and the genio-glossus inwardly." The large colon of the horse is said to be fixed by adherence to the "cross of the cæcum;" we do not know what the cross of the cæcum is,

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but the angle or bend (*crosse*) can be easily understood; in other places this word is correctly translated. Several minor errors in which nouns are rendered as adjectives and sentences are incomplete, will be no doubt corrected in a second edition.

Mr. Flemming has made some modifications in the general plan of the work, which will decidedly render it more useful to English readers. The descriptions of the anatomy of the ruminants, as well as those of the cat, dog, and birds, are in small type, so that it is not at all difficult, by omitting all but the large type, to study the bones, muscles, and nerves of the horse, without having to sift these out from the much larger mass of information respecting the other animals, as has to be done in the French edition. He has also added many notes, which in most cases bear on practical points in veterinary art; and he has omitted, wisely we think, the paragraphs of the original, which have reference to the dromedary and rabbit. Several of the unnecessary illustrations of human dissections, which can be found in many other works on the subject, have been omitted, and they have been replaced to advantage by others which further illustrate that of the horse, and also the recent advances in our knowledge of the structure of the tissues of the animal body.

Students of human anatomy are too apt to think that anthropotomy is the only subject of the kind which has been worked out thoroughly and in detail, but a glance at the book before us will soon remove that impression; and we are convinced that no one who has made any progress in a medical education could more profitably employ an occasional spare hour, than by a perusal of parts of this translation by Mr. Flemming of M. Chauveau's most excellent treatise.

RECENT ARITHMETICS

Arithmetic in Theory and Practice. By J. Brook-Smith, M.A., LL.B. (Macmillan, 1872.)

A Treatise on Arithmetic. By J. Hamblin Smith, M.A. (University Press, Cambridge, 1872.)

Figures made easy. A First Arithmetic Book. By Lewis Hensley, M.A. (Clarendon Press Series, Oxford, 1872.)

Notes on Arithmetic and Algebra. By the Rev. S. E. Williams, M.A. (Cambridge: J. Hall and Son, 1872.)

MOST persons engaged in tuition have often this critical question proposed to them, "Whose arithmetic do you recommend?" and as almost every teacher of mathematics fancies he has something new or varied to say on the subjects he has long taught, many rush into print, and thus submit their claims to consideration to a wider circle than that they have hitherto addressed. "As many arithmetics as teachers of the science," is perhaps as true a doctrine as that which applies to men and their opinions, certainly the writing of treatises on the subject has not of late years got into disfavour with the body referred to, and a second edition of De Morgan's Arithmetical Books, would show a considerable increase in number of authors if brought down to the present date. Every year sends forth a heap of candidates for the public favour. On the whole perhaps arithmetic has been very fairly treated; most of the treatises that have come under our own eyes have possessed something to recommend them. We have grouped together for our present consideration some of the most recent works on the science. Without doubt the first book on our list is entitled to the place of honour; it is, we think, the best work that has appeared for some years, the only work claiming to be ranked on the same high platform with it, being the "Arithmetic Theoretical and Practical," by W. H Girdlestone, M.A. (Rivingtons, 1870): the two have much in common. In this treatise the leading propositions are discussed and reasoned out in a lucid and accurate manner; the fundamental principles are clearly stated, and there is a valuable collection of examination papers for the student to try his powers upon. The writer is a disciple of De Morgan, to whom, as well as to other eminent writers on Arithmetic, he acknowledges his indebtedness. The book is quite up to approved modern standards, as it gives contracted methods of work, and treats of the metric system, and of the application of per-centages. It needs no further commendation, and after stating that it is a good *practical* work, we advise a student in want of a good treatise, to get this, and make it part and parcel of his mental furniture. The "get-up" of the book, its external dress, its inner garniture, is not merely neat but positively elegant, and possibly indicates the high interest the author takes in the subject upon which he has written so well.

Mr. Hamblin Smith's work calls for no special comment: the ability with which the author has written on other subjects will doubtless induce many to purchase the book. It is hard to write anything new on so hackneyed a theme, and there are few who have been able to raise the treatment of it above the ordinary fair orthodox level. We believe it to be a sound book, but it could have been dispensed with (especially with our first considered work in the field) except as it serves to fill up a niche in a connected series of text-books. The writer in this case also aims at teaching not so much *rules* as *principles*, and he rightly treats the so-called *rule of three* by the rational method now so generally adopted. The book may be recommended as a school-book, and this is probably the object the writer had in view. There is a copious collection of examination papers, which occupies nearly one-sixth of the whole work.

The third work on our list is concerned with much lower ground than the two former; it is written for mere infants, so to speak, in the science—it is an A B C: the receiving vessels are small and their capacity consequently for acquiring such new ideas as are presented to them at the outset of their inquiries also small; our author, with the ability only acquired by careful thought and experience, prepares right food, and not too much of that, for each lesson. In forty lessons the pupil is carried from "first notions of counting" to "division of fractions." With careful oral teaching we believe the book to be well adapted for the end aimed at. It is printed in the effective style of the "Clarendon Press" Series, and is further recommended by its cheapness.

The "Notes" presuppose a general knowledge of the subject, and give for the most part no explanation of the rules. The book is intended to act more as a "refresher" than as an "instructor," yet in the addition, multiplication, and division of recurring decimals, together with

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